

CLAIMS

1-3 (Canceled)

4. (Currently Amended) ~~The method of claim 1 further comprising~~
A method for implementing protection switching for a virtual private network comprising:
establishing a working virtual private network path and a protection virtual
private network path between a first edge node and a second edge node;
switching traffic from the working virtual private network path to the
protection virtual private network path when detected traffic congestion in the working
virtual private network path exceeds a predetermined threshold;
establishing a management channel in at least one of said working virtual
private network paths;
connecting said management channel between said first edge node and
said second edge node;
transmitting time stamps across said management channel;
transmitting network measurement parameters across said management
channel; and
analyzing said time stamps and said network management parameters to
detect failures or congestion in said working virtual private network path.

5. (Previously Presented) The method of claim 4, wherein said time
stamps and said network management parameters are analyzed by an algorithm in said
first edge node.

6. (Previously Presented) The method of claim 4, wherein said time
stamps and said network management parameters are analyzed by an algorithm in said
second edge node.

7. (Previously Presented) The method of claim 4, wherein said working virtual private network path has an overall capacity and said management channel has a utilization not exceeding approximately ten percent of said overall capacity.

8. (Currently Amended) ~~The method of claim 1 further comprising~~
A method for implementing protection switching for a virtual private network comprising:
establishing a working virtual private network path and a protection virtual private network path between a first edge node and a second edge node;
switching traffic from the working virtual private network path to the protection virtual private network path when detected traffic congestion in the working virtual private network path exceeds a predetermined threshold; and
sending time stamps across said working virtual private network path and said protection virtual private network path.

9. (Previously Presented) The method of claim 8 further comprising:
utilizing said time stamps for synchronizing data transmission across said working virtual private network path and said protection virtual private network path.

10. (Original) The method of claim 8 further comprising:
utilizing said time stamps to enable recovery of data lost on said working virtual private network path and said protection virtual private network path.

11-13 (Canceled)

14. (Currently Amended) ~~The apparatus of claim 12 further comprising~~
An apparatus for protection switching of a virtual private network comprising:
a working virtual private network path connected between a first edge node and a second edge node;
a protection virtual private network path connected between the first edge node and the second edge node;

a congestion detector;

a data switch,

wherein when data is transmitted across the working virtual private network path, said congestion detector is configured to detect traffic congestion on said working virtual private network path and said data switch switches said data from said working virtual private network path to said protection virtual private network path when said traffic congestion exceeds a predetermined threshold;

a normal operation detector; and

a second data switch,

wherein when said normal operation detector detects a return to normal functioning of said working virtual private network path, said second data switch switches said data from said protection virtual private network path to said working virtual private network path.

15. (Currently Amended) ~~The apparatus of claim 12 further comprising~~
An apparatus for protection switching of a virtual private network comprising:

a working virtual private network path connected between a first edge node and a second edge node;

a protection virtual private network path connected between the first edge node and the second edge node;

a congestion detector;

a data switch,

wherein when data is transmitted across the working virtual private network path, said congestion detector is configured to detect traffic congestion on said working virtual private network path and said data switch switches said data from said working virtual private network path to said protection virtual private network path when said traffic congestion exceeds a predetermined threshold;

a management channel in at least one of said working virtual private network paths;

a plurality of time stamps transmitted across said management channel;
and

a plurality of network measurement parameters transmitted across said management channel;

wherein said time stamps and said network management parameters are analyzed to detect a failure or congestion in said working virtual private network path.

16. (Original) The apparatus of claim 15, wherein said time stamps and said network management parameters are analyzed by an algorithm in said first edge node.

17. (Original) The apparatus of claim 15, wherein said time stamps and said network management parameters are analyzed by an algorithm in said second edge node.

18. (Previously Presented) The apparatus of claim 15 wherein said working virtual private network path has an overall capacity, and wherein the apparatus is configured to limit utilization of said management channel to an amount not exceeding approximately ten percent of said overall capacity.

19. (Currently Amended) ~~The apparatus of claim 12 further comprising~~An apparatus for protection switching of a virtual private network comprising:
a working virtual private network path connected between a first edge node and a second edge node;
a protection virtual private network path connected between the first edge node and the second edge node;
a congestion detector;
a data switch,
wherein when data is transmitted across the working virtual private network path, said congestion detector is configured to detect traffic congestion on said working virtual private network path and said data switch switches said data from said working virtual private network path to said protection virtual private network path when said traffic congestion exceeds a predetermined threshold; and

a plurality of time stamps sent across said working virtual private network path and said protection virtual private network path.

20. (Previously Presented) The apparatus of claim 19, wherein said plurality of time stamps are configured to synchronize data transmitted across said working virtual private network path and said protection virtual private network path.

21. (Original) The apparatus of claim 19, wherein said plurality of time stamps enable recovery of data lost from said working virtual private network path and said protection virtual private network path.

22-32 (Canceled)

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